

REMARKS

New independent claim 17 includes the subject matter of claims 7, 11 and 12, which the Examiner indicated would be allowable if placed in such form. Accordingly, allowance of claim 17 is believed proper and action to that effect is respectfully requested along with claims 13, 14 and 15 now dependent from claim 17.

Independent claim 7 as now amended covers the particular embodiment shown in Figs. 1 and 2 wherein the acoustical projector comprises a single cylindrical shell segment and two drivers mounted within the single shell segment in a longitudinal spaced relationship. The Office Action in rejecting original claim 7 contends that the same is unpatentable over Flanagan et al. (US 5,229,978) in view of Pauer (US 5,508,976) and Kompanek (US 4,651,044). Applicant agrees that Flanagan discloses an acoustical projector that includes a cylindrical shell and a driver 13 mounted therein. However, it shows a single shell with a single driver and not two longitudinally spaced drivers mounted in a single shell. Flanagan discloses a similar driver construction to that of Kompanek in that it shows a single transducer formed by a plurality of individual segments 18 (see Column 4, lines 14-25). These segments are spaced circumferentially with respect to each other and are not individual drivers spaced longitudinally with respect to each other in each of the shell segments as set forth in claim 7. Thus, Flanagan teaches the same type of transducer as that taught by Kompanek and does not disclose in any manner an acoustic projector comprising a single cylindrical shell segment with a pair of longitudinally spaced drivers mounted in the shell.

It has been found that the use of two drivers in a single shell segment stiffens the shell segment in a longitudinal length direction and reduces longitudinal vibration modes, as well as significantly reducing acoustic segment interactions usually caused by hydrodynamic load variations along the length, and it enables the shell segment to be of various lengths with the two drivers assembled inside of one shell providing for a more cost effective projector. Furthermore, it has been found that this construction better eliminates shell

segment interactions and provides flexibility to the designer to reduce unwanted segment interactions not believed accomplished by the cited references.

The Examiner contends that Pauer discloses an even number of longitudinally spaced drivers 14. Applicant respectfully disagrees with this conclusion since only five drivers 14 are clearly shown in Fig. 1 and it is conjecture that there are six or more drivers contained therein. However, claim 7 as now amended specifies that only two drivers are contained in a single shell segment, which clearly is not shown or suggested in any manner by Pauer. The Examiner then contends that Kompanek discloses an embodiment in Fig. 5 having an even number of longitudinally joined cylindrical shell segments which now is completely different from the acoustic projector now defined in amended claim 7, namely a single shell segment having two longitudinally spaced drivers in the single shell segment. Fig. 5 shows an electroacoustical transducer having six shell segments which are longitudinally joined wherein each of the six transducers 10a-10f is the transducer of Figs. 1 and 2 (see Column 4, lines 60-68). However, the transducer of Fig. 1 has a single shell 12 with a plurality of driver segments 16 (not individual drivers) mounted therein forming a single driver.

It is respectfully submitted that there is not a pair of spaced drivers in the single shell as shown in Fig. 1 of Kompanek. There is only a single driver formed by a plurality of driver segments. This is clearly shown in Fig. 1 where each of the segments includes a negative end and a positive end wherein all of the positive ends (plus terminals) are joined as shown by the innermost circle of Fig. 1, with the negative ends (negative terminals) being joined as shown by the outer circular line in Fig. 1.

The Office Action, states that in view of Kompanek it would be obvious to modify Flanagan by utilizing an even number of cylindrical shell segments joined together to provide a sonar projector that increases the power at high efficiency and controlled frequencies and that in view of Pauer, it would be obvious to modify Flanagan by utilizing an even number of longitudinally spaced drivers within each shell so as to provide acoustical energy at low frequency and high altitude. However, if such a combination was made, it would merely show an even number

of cylindrical shell segments joined together wherein each of the shell segments includes a plurality of polarized circumferentially arranged sectional elements as clearly shown in both Kompanek and Flanagan and not a pair of drivers which are in a longitudinally spaced relationship in a single shell segment as now set forth in amended claim 7. Again, Kompanek and Flanagan both show a single transducer formed by a plurality of circumferentially arranged driver segments which together form a single driver. Such a construction is completely different from that as now defined in amended claim 7.

The Office Action furthermore states that neither of the references show the combined length of the drivers being between 70% and 90% of the longitudinal length of the shell segment as defined in claim 10, but that such is a matter of design choice that one of ordinary skill would find obvious. Such a relationship is not shown or suggested in any manner in any of the cited references, nor is there any reason given why such a combined length would be obvious.

Claim 16 specifies that the acoustic projector of claim 7 is formed of two shell segments which are longitudinally joined, with each of the shell segments containing two longitudinally spaced drivers. This is the embodiment shown in Figs. 3 and 4 of the drawings and described in the Specification wherein embodiment 22 consists of a pair of shell segments 8 with each segment 8 containing a pair of drivers 10. Again, neither Kompanek, Flanagan or Pauer individually or when combined, show such a construction of Figs. 3 and 4 as discussed above or why such a specific construction would be obvious.

Osborn (6,643,222) was cited merely to show that the shell material could be formed of a graphite epoxy composite material as set forth in claim 9. However, Osborn in no way shows or suggests the particular acoustic projector construction as set forth in claim 7 from which claim 9 depends.

Therefore, it is respectfully submitted that none of the three references, individually and even if combined in some manner, would show or suggest the forming of the particular embodiment of Figs. 1 and 2 as now defined in claim 7, wherein the transducer is comprised of a single shell segment having two longitudinally spaced drivers mounted within the single shell segment.

Furthermore, these three references do not show the particular embodiment shown in Figs. 3 and 4 and defined in claim 16, wherein two shell segments are longitudinally joined with each of the shell segments containing two longitudinally spaced drivers. Again, such a construction is clearly not shown in any of the three references since Flanagan only shows a single shell segment having a single driver therein, Pauer shows a single shell segment with at least five drivers mounted therein (Fig. 1), and Kompanek showing a transducer having six shell segments. Thus, claim 16 clearly is not shown, suggested or obvious in view of the teachings of these three references.

In view of the foregoing, the Applicant respectfully requests reconsideration of the claims and most earnestly solicits the issuance of a formal notice of allowability for the claims. Please call the undersigned attorney if any questions remain after this amendment.

Respectfully submitted this 4th day of June, 2007.

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A handwritten signature in cursive script, reading "Karina A. Butler".

Karina A. Butler